

## PATENT ABSTRACTS OF JAPAN

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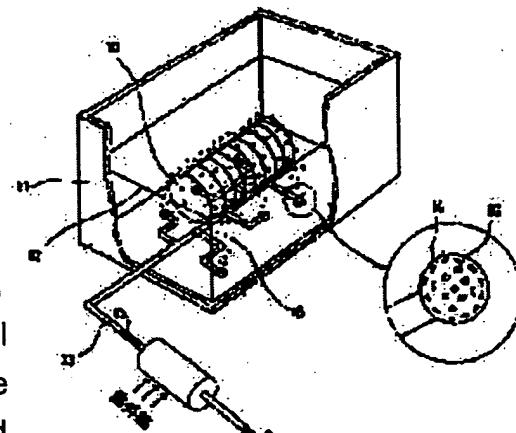
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## (54) PROCESS FOR CLEANING SEMICONDUCTOR DEVICES

## (57)Abstract:

PURPOSE: To maintain an appropriate impurity concentration by removing Cu ions and to allow a highly durable, high-performance cleaning to be effected by placing semiconductor devices in a cleaning vessel which contains an HF solution and supplying an O<sub>3</sub> gas into the vessel.



CONSTITUTION: Semiconductor devices 10 to be cleaned are placed in a cleaning vessel 11 containing an HF solution 12, and an O<sub>3</sub> gas is supplied into the vessel 11 by foaming the gas. The O<sub>3</sub> gas is supplied via a tube 13 that has on its distal end a plurality of golf ball-shaped nozzles 14, each nozzle having a plurality of holes 16. The O<sub>3</sub> gas supplied via the tube 13 is changed into O<sub>2</sub> and [O], and the [O] either is dissolved into the HF solution or oxidizes an impurity metal (Cu) present in a surface of a Si crystal, thereby forming chemically stable CuF<sub>2</sub> precipitates. By thereafter removing the CuF<sub>2</sub> precipitates using an ultraclean distilled water, the surfaces of the semiconductor devices can be cleaned.